

PATENT COOPERATION TREATY
PCT
INTERNATIONAL SEARCH REPORT
(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference TV/11830.102	FOR FURTHER ACTION <div style="float: right; font-size: small;">see Form PCT/ISA/220 as well as, where applicable, item 5 below</div>	
International application No. PCT/CA2004/002118	International filing date (<i>day/month/year</i>) 13 December 2004 (13-12-2004)	(Earliest) Priority date (<i>day/month/year</i>) 12 December 2003 (12-12-2003)
Applicant INFECTIO RECHERCHE INC. ET AL		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows :

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ as selected by this authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☒ none of the figures is to be published with the abstract.

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
- a. type of material
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments :

An invitation (Form PCT/ISA/ 225) was sent to the applicant to furnish to this Authority a nucleotide Sequence Listing on March 18, 2005. Applicant has requested an extension of time in order to file the Sequence Listing on April 14, 2005. This international search report has been established without regard to any nucleotide sequences disclosed in the international application.

A. CLASSIFICATION OF SUBJECT MATTER
IPC⁷ C12Q-1/68

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC⁷ C07, C12, A61

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Canadian Patent Database, DELPHION, USPTO, ESPACENET, PUBMED
Neutral probe, neutral capture probe, DNA, detection, hybridization, peptide nucleic acid, PNA, methylphosphonate, cationic polymer, conductive polymer, electrostatical, polythiophene, enzyme, alkaline phosphatase, unlabeled, probe array

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	US 2003/0152995 A1 (HANNAH, E.) 14 August 2003 Abstract; and paragraphs 55 and 63	1-24 (1st), 26-49 and 52-57
X	US 2002/0068295 A1 (MADOU, M. et al.) 6 June 2002 Abstract; and paragraphs 5, 22-24, 40, 54, 55, 65 and 67	1-24 (1st), 26-49 and 52-57
X	US 6,589,731 B1 (CHEN, L. et al.) 8 July 2003 Abstract; column 2, lines 12-25; column 4, line 13-18; column 4, lines 49-51; and claim 10	1-24 (1st), 26-49 and 52-57

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :	"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

25 February 2005 (25-02-2005)

Date of mailing of the international search report

21 April 2005 (21-04-2005)

Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No.: 001(819)953-2476

Authorized officer

Qianfa Chen (819) 994-1374

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	US 6,197,949 B1 (TEOULE, R. et al.) 6 March 2001 Abstract; column 2, lines 5-19; column 2, lines 56-61; and column 6, lines 28-35	1-24 (1st), 26-49 and 52-57
X	WO 02/095052 (HYLDIG-NIELSEN, J. et al.) 28 November 2002 Abstract; page 2, lines 20-25; and page 8, line 14 to page 9, line 2	24 (2nd), 25, 50 and 51
Y	NILSSON, K. et al. (A). Self-assembly of synthetic peptides control conformation and optical properties of a zwitterionic polythiophene derivative. Proc. Natl. Acad. Sci. U.S.A., 2 September 2003, Vol.100, No.18, Pages 10170-10174 Abstract; page 10170, lc, 2 nd paragraph; Figure 2; and Results and Discussion sections	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	NILSSON, K. et al. (B). Chip and solution detection of DNA hybridization using a luminescent zwitterionic polythiophene derivative. Nature Materials, June 2003, Vol.2, Pages 419-424 Abstract	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	WO 02/081735 A3 (LECLERC, M. et al.) 17 October 2002 Abstract	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	NIELSEN, P. et al. An introduction to peptide nucleic acid. Current Issues Molec. Biol., 1999, Vol.1, No.2, Pages 89-104 Abstract; page 91, lines 18-22; and page 93, lines 4 and 5	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	US 2002/0177136 A1 (MCBRANCH, D. et al.) 28 November 2002 Paragraphs 3, 25 and 27-30	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y,P	DORÉ, K. et al. Fluorescent polymeric transducer for the rapid, simple, and specific detection of nucleic acids at the zeptomole level. J. AM. Chem. Soc. 7 April 2004, Vol.126, No.13, Pages 4240-4244 See the whole document	1-57

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
A	LUKKARI, J. et al. Polyelectrolyte multilayers prepared from water-soluble poly (alkoxythiophene) derivatives. J. AM. Chem. Soc., 2001, Vol.123, Pages 6083-6091 See the whole document	1-57
A	FRITZ, J. et al. Electronic detection of DNA by its intrinsic molecular charge. Proc. Natl. Acad. Sci., 29 October 2002, Vol.99, No.22, Pages 14142-14146 See the whole document	1-57
A	SASTRY, M. Assembling nanoparticles and biomacromolecules using electrostatic interactions. Pure Appl. Chem., 2002, Vol.74, No.9, Pages 1621-1630 See the whole document	1-57
A	HO, H. et al. Optical sensor based on hybrid aptamer/conjugated polymer complexes. J. AM. Chem. Soc., 2004, Vol.126, Pages 1384-1387 See the whole document	1-57
A	WO 98/03499 (LECLERC, M. et al.) 29 January 1998 See the whole document	1-57
A	XIAO, S. et al. Selfassembly of metallic nanoparticle arrays by DNA scaffolding. J. Nanoparticle Res. 2002, Vol.4, Pages 313-317 See the whole document	1-57

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2004/002118

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US2003152995 A1	14-08-2003	US6767731 B2 US2003165964 A1 US2005019800 A1	27-07-2004 04-09-2003 27-01-2005
US2002068295 A1	06-06-2002	AU8055201 A CA2419156 A1 EP1301585 A2 WO0206789 A2	30-01-2002 24-01-2002 16-04-2003 24-01-2002
US6589731 B1	08-07-2003	AU4705800 A AU2003225551 A1 CA2340905 A1 EP1097242 A1 IL141383D D0 US6541671 B1 US6730805 B2 US2004023272 A1 WO0066790 A1 WO03068913 A2	17-11-2000 04-09-2003 09-11-2000 09-05-2001 10-03-2002 01-04-2003 04-05-2004 05-02-2004 09-11-2000 21-08-2003
US6197949 B1	06-03-2001	AT159028T T DE69406119D D1 DE69406119T T2 DK691978T T3 EP0691978 A1 ES2110228T T3 FR2703359 A1 GR3025738T T3 JP3247957B2 B2 US5837859 A WO9422889 A1	15-10-1997 13-11-1997 26-03-1998 25-05-1998 17-01-1996 01-02-1998 07-10-1994 31-03-1998 21-01-2002 17-11-1998 13-10-1994
WO02095052 A2	28-11-2002	EP1417333 A2 US2003175727 A1	12-05-2004 18-09-2003
WO02081735 A3	17-10-2002	CA2442860 A1 EP1373246 A2 JP2004534013T T US2004171001 A1	17-10-2002 02-01-2004 11-11-2004 02-09-2004
US2002177136 A1	28-11-2002	AU6299401 A CA2409512 A1 EP1301626 A1 IL152711D D0 JP2003532878T T NO20025371 A US6743640 B2 US2004241768 A1 WO0185997 A1	20-11-2001 15-11-2001 16-04-2003 24-06-2003 05-11-2003 07-01-2003 01-06-2004 02-12-2004 15-11-2001
WO9803499 A1	29-01-1998	AT212988T T AU3252197 A CA2260888 A1 DE69710338D D1 EP0918766 A1 JP2000515515T T US6051679 A	15-02-2002 10-02-1998 29-01-1998 21-03-2002 02-06-1999 21-11-2000 18-04-2000